Transportation Plan

Marys River Oil and Gas Exploration Project
Noble Energy, Inc.

Presented to:

Bureau of Land Management
Wells Field Office
Elko, Nevada

February 2013

TRANSPORTATION PLAN
MARYS RIVER OIL AND GAS EXPLORATION PROJECT

1.1 INTRODUCTION

This Transportation Plan addresses traffic and road use associated with the Noble Energy, Inc. (Noble) Marys River Oil and Gas Exploration Project. The proposed project area is located in Elko County, Nevada, approximately 40 miles northeast of Elko, Nevada and 4 miles northwest of Wells, Nevada on the north side of Interstate-80. Noble's project proposal identifies 35 potential new well pads (20 well pads with federal surface and/or minerals and 15 well pads with private surface and private minerals). Noble intends to construct up to 20 of the 35 identified well pads and drill and complete up to 20 wells during exploration. Construction of new roads and upgrading of existing roads are part of the proposal. The wells will potentially be in production for up to 20 years.

Well pads will be accessed using existing county, BLM, private, and newly constructed access roads (see Map 1). Noble proposes to generally use existing county roads to access the project area and has identified up to 28.1 miles of existing two track roads within and adjacent to the project area that would require upgrading. To access individual well pads from local roads, Noble has identified up to 9.7 miles of potential newly constructed local and resource roads. The extent of road upgrades and new construction will depend on which well pads are selected for exploration. In accordance with the BLM Elko District Recommended Operating Procedures for Notice Level Operations (BLM Recommended Operating Procedures), Noble is proposing access that is the most direct and safe route with the least amount of disturbance.

This plan addresses the project area and adjacent areas that include roads that may be used to access the project area (see Map 1). This document describes existing roads and roads identified for upgrade/construction, identifies the parties responsible for road maintenance, and estimates the traffic levels associated with construction (including drilling and completion) and operation of the project.

1.2 ACCESS ROUTES

1.2.1 Primary Access Routes in the MREP Area

Road types, or functional classifications, describe the functions that roads serve in facilitating traffic flows within a transportation network. Principal arterial roads, such as interstates and state highways, accommodate high traffic volumes and have limited access. Minor arterial roads include county roads that connect population centers with principal arterials. Collector roads include county and BLM roads that provide primary access to large blocks of land, and are generally two lanes wide. Table 1 lists the arterial and collector roads within the project area transportation network, indicates their surface type, and identifies the party responsible for road maintenance.

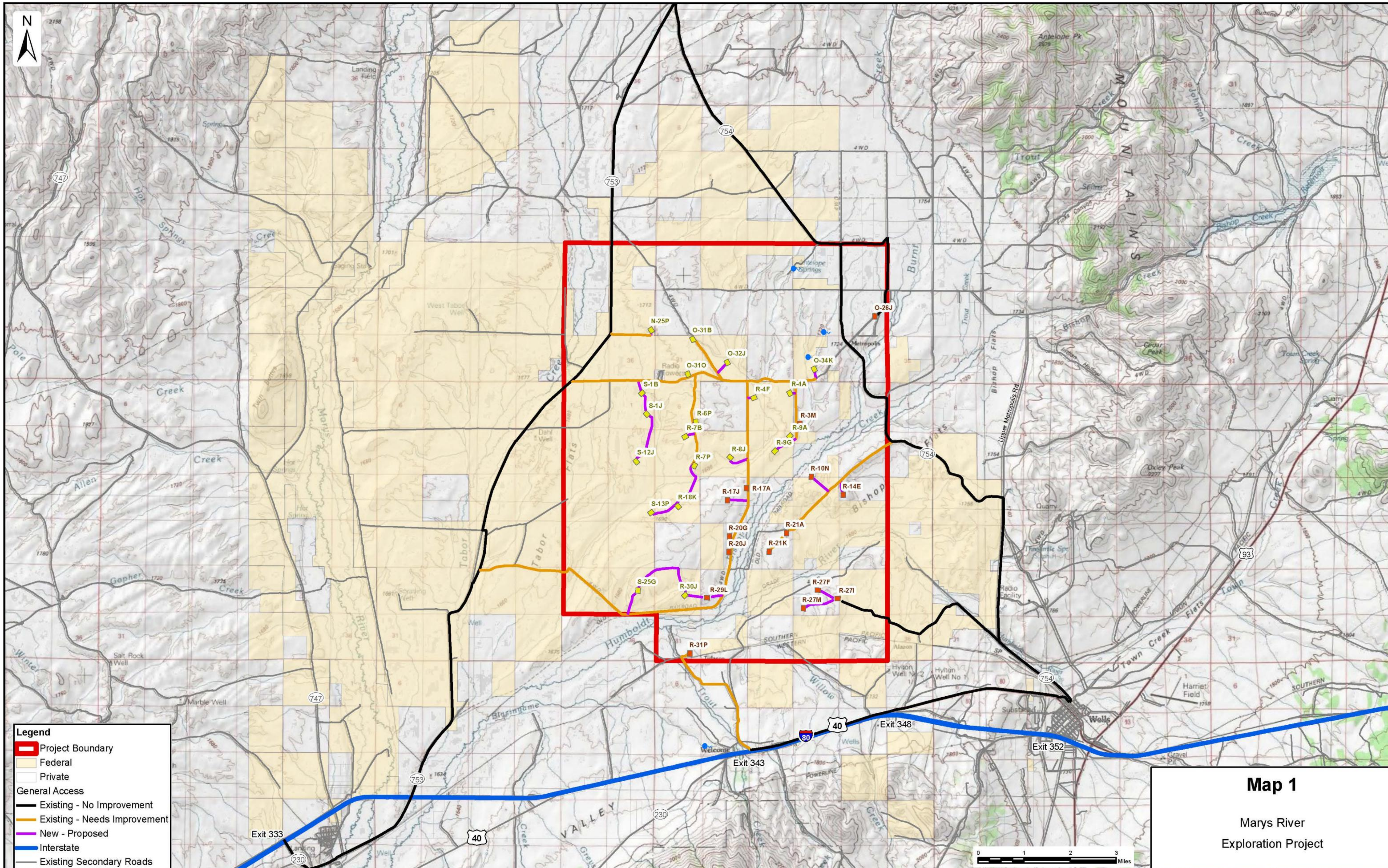
N
Legend
Project Boundary
Federal
Private
General Access
Existing - No Improvement
Existing - Needs Improvement
New - Proposed
Interstate
Existing Secondary Roads
Map 1
Marys River
Exploration Project
0
1
2
3
Miles
N-25P
O-31B
O-32J
O-31O
O-34K
O-26J
S-1B
S-1J
S-12J
S-13P
S-25G
R-4A
R-4F
R-3M
R-9A
R-9G
R-6P
R-7B
R-7P
R-8J
R-10N
R-14E
R-17J
R-17A
R-18K
R-20G
R-20J
R-21A
R-21K
R-27F
R-27I
R-27M
R-29L
R-30J
R-31P
Exit 333
Exit 343
Exit 348
Exit 352
Wells
Metropolis
Antelope Pk
Oxley Peak
Cedar Peak
Bishop Flats
Upper Metropolis Rd
Humboldt
Tabor Flats
Marys River
Town Creek Flats
VALLEY

Table 1
Primary Access Routes for Marys River Oil and Gas Exploration Project

Road Name	Road Type	Surface Type	Maintenance Responsible Party
Interstate-80	Arterial	Pavement	NDOT[1]
U.S. Highway 40	Arterial	Pavement	NDOT[1]
Elko County Road (CR) 754 (Metropolis Road)	Collector	Paved surface for 13 miles out of Wells, NV; gravel surface for 16 miles to CR 753 junction	Elko County
Elko CR 753 (Deeth-O'Neill Road)	Collector	Pavement south of I-80, gravel north of I-80	Elko County
Nevada State Route 230 (Starr Valley Road)	Collector	Pavement	NDOT[1]

[1] NDOT = Nevada Department of Transportation

Local and resource roads include BLM and private roads that link areas with low traffic volumes to higher classification roads. Local roads connect to collector roads and serve a smaller area than collector roads, and may be one or two lanes with lower traffic volumes. Resource roads are BLM roads that provide point access, connecting to local or collector roads, and are single lanes to individual well pads.

1.2.2 Access Routes

Deeth-O'Neill Road Access Route

From Interstate-80, primary access to the western and central portions of the project area is via Nevada State Route (SR) 230 (Starr Valley Road), and Elko County Road (CR) 753 (Deeth-O'Neill Road). The western access route exits Interstate-80 at SR 230 (Exit 333) and proceeds for approximately 0.75 miles to CR 753. The route turns left on CR 753 and continues in a generally eastward direction for approximately 2 miles, at which point the road curves north and continues another 0.8 miles to pass below Interstate-80. The access route continues on CR 753 for approximately 6 miles to where it intersects an unimproved road running east/west and into the project area. This unimproved road, which will require upgrading, provides access to several proposed well pads. This southern exit off of CR 753 into the project area proceeds east for approximately 1.8 miles, then veers to the right and heads in a southeastern direction for approximately 1.3 miles. At this point (Point A), the existing road continues eastward for approximately 2 miles, then veers to the right and proceeds for approximately 5.75 miles in a generally northern direction to access proposed well pads R-20J, R-20G, and R-17A. From this road, new resource roads will be constructed to access any or all of proposed well pads R-29L, R-30J, S-25G, R-17J, R-8J, and R-4F. In addition, from the point at which the access route turns east after its southeastern leg (Point A), a new, approximately 2.3 mile, local road will be constructed to access proposed well pads S-25G, R, 30J and R-29L. This new local road will join the southern portion of the access route approximately 0.2 miles beyond the point at which it turns northward.

Following the point at which the southern access route described above exits CR 753, the Deeth-O'Neill access route continues north on CR 753 for approximately 4 miles, where it enters the central portion of the project area and intersects an unimproved road that provides access to a radio tower site. This road, which will require improvement, provides the best access for the majority of proposed well pads. The road proceeds east for approximately 1.75 miles, where a new resource road could be constructed to the south to provide access to proposed well pads S-

1B, S-1J, and S-12J. The central access route continues approximately 1 mile to proposed Well Pad O-31O. Just east of this point, an existing unnamed road, which will require improvement, leads southward to proposed well pads R-6P and R-7P. From this road, new resource roads will be constructed to access any or all of proposed well pads R-7B, R-18K, and S-13P. Approximately 0.6 miles east of Well Pad O-31O, an unnamed road heads northwest to provide access to proposed Well Pad O-31B. From this road, a new resource road would lead to proposed Well Pad O-32J. Approximately 1.25 miles east of Well Pad O-31O, the central access route intersects the southern access road described in the paragraph above. East of this intersection, the Deeth-O'Neill access route continues eastward for approximately 1.5 miles to a new resource road that would be constructed to access proposed Well Pad O-34K. One mile east of the intersection, an existing road, which will require upgrading, would provide access to proposed Well Pad R-3M. From this road, new resource roads will be constructed to access any or all of proposed well pads R-4A, R-9A, and R-9G.

On CR 753, approximately 1 mile beyond the road accessing the central portion of the project area, an unimproved and unnamed road on the right proceeds approximately 1 mile to a new resource road that would lead to proposed Well Pad N-25P.

Metropolis Road Access Route

From Interstate-80, primary access to the eastern portion of the project area is via U.S. Highway 40 and Elko CR 754 (Metropolis Road). The eastern access route exits Interstate-80 at U.S. Highway 40 (exit 348), turns right to remain north of the interstate, and proceeds approximately 3.7 miles eastward to the town of Wells, where U.S. Highway 40 becomes 6th Street. The access route turns left onto 7th Street, then left onto 8th Street and proceeds 2 miles to Upper Metropolis Road/CR 754.

From Wells, the access route proceeds approximately 1.6 miles on CR 754 to a Y-junction. From this point, the access route divides. Continuing straight beyond the Y-junction, the southern portion of the Metropolis Road access route proceeds for approximately 1 mile, and turns southeast onto an unimproved and unnamed road, which will require upgrading, that proceeds for approximately 1 mile to an existing road that will not require upgrading. The access route turns right on the existing road and proceeds west for approximately 2 miles to proposed Well Pad R-27I. From this point, new resource roads would be constructed to access either or both of proposed well pads R-27M and R-27F.

From the Y-junction, the Metropolis Road access route continues north on CR 754 for approximately 2.5 miles and then turns northwest for approximately 2.5 miles where it enters the project area. At this point, CR754 intersects an existing unimproved and unnamed road that requires improvement and heads in a southwest direction for approximately 2.5 miles to access proposed well pads R-21A and R-21K. From this road, new resource roads would be constructed to access either or both of proposed well pads R-14E and R-10N. From the point where it enters the project area, CR754 continues in a northwestern direction through the northeast corner of the project area. At the project area's northern boundary, CR754 intersects an existing east/west road that would be used to access proposed Well Pad O-26J in the northeastern corner of the project area.

Starr Valley Road Access Route

The southernmost portion of the project area is accessed from SR 230. The southern access route exits Interstate-80 at Exit 343 and follows SR 230 eastward along the north side of the interstate

to an unimproved road that requires improvement and leads 3 miles north to the southern boundary of the project area and proposed Well Pad R-31P.

1.3 ROAD CONSTRUCTION AND IMPROVEMENTS

Up to 9.7 miles of new local and resource roads will be required to access the proposed well pads from existing and upgraded local roads. New roads will be constructed at the same time as the respective well pad construction, and will generally require a 59 foot width for construction (see Figure 1).

Up to 28.1 miles of existing two-track roads will require upgrading. Upgrading of these roads will occur within and outside of the existing disturbance of the existing two-track roads. Construction will generally require a 59 foot width for construction (see Figure 1). The final road width will be 29 feet with a 24 foot running surface for the road.

The proposed access roads will be constructed and upgraded to meet standards for the anticipated traffic flows and all-weather requirements. Roads will be crowned or sloped, drained with ditches, culverts and/or water dips, and constructed, sized, and surfaced in compliance with the BLM/Forest Service *Surface Operating Standards and Guidelines for Oil and Gas Development*, also known as the *Gold Book* (BLM, 2007), and the BLM's 9113 Roads Manual (1985).

Noble will implement the following measures during road construction in accordance with the BLM Recommended Operating Procedures:

- Low water crossings (no fill) or adequately sized culverts will be used where access roads cross intermittent or perennial drainages. Fill will not obstruct water flow.

- All bladed roads will be waterbarred as necessary with the following spacing:

Road Grade (percent)	Spacing Between Waterbars (feet)
10 to 14	200 to 100
6 to 10	300 to 200
4 to 6	400 to 300
Less than 4	only as needed

- When a fence is cut to allow access to a site, a temporary gate will be installed to prevent livestock from passing through the opening; the fence will be repaired to its original condition or better as soon as possible.
- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Roads designed to safe standard for intended use.
- Restrict vehicle traffic to only authorized users on newly constructed routes where specified by the county, landowners and/or the BLM (use signing, gates, etc.).
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Transportation planning to align roads out of sight and sound of occupied leks where practicable

ROADWAY RIGHT OF WAY

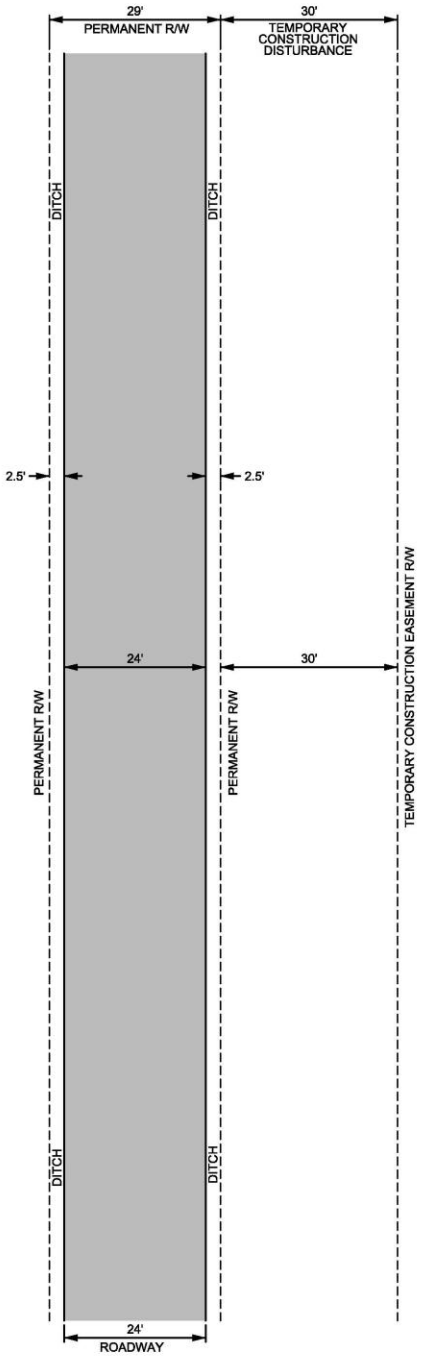

FIGURE 1

0 20 40

SCALE: 1" = 20'

WILSON PROJECT MARYS RIVER FIELD SURFACE USE PLAN TYPICAL ROAD R/W	DSGN / DATE / CKD CPD / 5/12 / STH REV / DATE / CKD JOB #2012-084	noble energy 1625 BROADWAY, SUITE 2200 DENVER, CO 80202 (303) 228-4000	WWC ENGINEERING 1275 MAPLE STREET, SUITE F HELENA, MT 59601 (406) 443-3962	

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1.4 ROAD MAINTENANCE

Noble will coordinate with the Elko County Road Department to insure that use of county roads conforms with issued use permits, rights of way, and other county requirements. Paved roads are not likely to require improvement or maintenance prior to or during project development. Primary access routes will be maintained by the Nevada Department of Transportation (NDOT) and Elko County (see Table 1). Roads with gravel or dirt surfaces (generally local and resource roads) will be likely to require maintenance to pre-existing conditions during construction and operation. These roads will be maintained by Noble.

Noble will maintain roads in accordance with BLM 9113 Manual specifications (BLM 1985, 1991) and the BLM/Forest Service *Gold Book* (BLM and Forest Service, 2007). Noble will be responsible for all maintenance actions necessary to provide all-weather access to roads in the project area and Noble will provide timely maintenance and cleanup of access roads to pre-existing conditions. Existing main roads used as access that are substantially damaged by construction and/or operational traffic will be repaired to the condition existing prior to the activities.

Maintenance will include, but not be limited to: dust abatement; reconstruction of the crown, slope, and/or water bars; blading or resurfacing; material application; clean-out of ditches, culverts, catchments; snow plowing, and other BMPs.

In accordance with the BLM Recommended Operating Procedures, roads will not be bladed directly up drainages and will be designed at a right angle to the drainage. Roads bladed in drainages will be located a sufficient height above the channel so that fill material does not enter into the drainage channel.

Posted speed limits will be followed. Where there is no posted speed limit, speeds on unpaved access roads and disturbed areas will not exceed 20 miles per hour.

According to the BLM Recommended Operating Procedures, saturated soil conditions exist when water is flowing on the ground surface, water comes to the ground surface from walking or driving across the soil, the ground surface is spongy when walked on, ruts 3 inches or deeper occur from driving across the ground surface, when vehicles get stuck in mud, and when a dozer is needed to pull vehicles through the mud, etc. Construction travel only will be halted until soil material dries out or is frozen sufficiently for use to proceed without undue damage and erosion to soils and roads. When rutting of the travel-way reaches a depth of 3 inches, maintenance or upgrade will be conducted as approved by the BLM.

Dust suppression will be implemented by spraying water on unpaved roads on an as-needed basis. Magnesium chloride and other surfactants, binding agents, or other dust-suppression chemicals will not be used for dust control without prior approval from the BLM.

1.5 TRAFFIC LEVELS

1.5.1 Construction Traffic

During the construction phase, typical traffic levels in the project area will occur while one well pad and the associated access road are under construction, one vertical well is being drilled, and one vertical well is being completed. During these periods, project-related traffic could potentially include 38 light vehicles and 33 heavy vehicles (see Table 2). If Noble drills a water supply well for drilling on the well pad, two fewer water trucks per day will be required. Additional traffic would occur during periods of rig mobilization. Rig mobilization is expected to include 5 days for rig set-up and 5 days for rig take-down. During these 10 days, additional traffic would include four light vehicles and 12 heavy vehicles (60 trucks over 5 days).

To limit the number of vehicles travelling on regional roads, drilling workers will remain on-site in on-site accommodations while the well is being drilled. The days on which drilling crew changes occur (every 14 days), there would be an additional 16 light vehicles round trips.

Table 2
Marys River Estimated Construction Traffic
Single Vertical Well Requirements in Vehicle Round Trips per Day

Activity	Duration (days)	Peak Vehicle Round-Trips per Day		
		Light Vehicles	Heavy Vehicles	Total Vehicles
Road and Pad Construction	75	5[1]	4[2]	9
Drilling	50	11[3]	3[4]	14
Completion	21	12[5]	24[6]	36
Service and Deliveries	50	10[7]	0	10
Dust Control	81	0	1[8]	1
Interim Reclamation	3	0	1	1
Total Single Vertical Well Development Traffic		**38**	**33**	**71**

[1] Includes 4 personal vehicles for 7 workers (carpooling assumed) and one supervisor light-vehicle.
[2] Includes 4 trucks hauling gravel. Assumes that heavy equipment needed for road and pad construction will remain on-site.
[3] Light vehicles include personal vehicles for two well site consultants, two mudloggers, one mud engineer, three solids control, and two active system aeration workers; and one additional vehicle. Assumes that two 6-man crews with supervisor, one directional driller, and one MWD worker remain onsite for 14 days.
[4] Assumes that the 10,000 barrels of water needed to drill a vertical well is hauled in 100 barrel capacity trucks over a 50 day drilling schedule (2 trucks per day) and 1 additional truck per day (e.g. casing deliveries, cement trucks, wireline logging trucks). Trucks hauling water for drilling would not be required if a water supply well is drilled on the well pad.
[5] Assumes that completion workers carpool in ten vehicles, and includes two supervisor vehicles.
[6] Assumes 50,000 barrels of water delivered in 100 barrel capacity trucks over 21 days.
[7] Includes vendor deliveries, service visits, and additional site personnel.
[8] Assumes 80 barrels per mile per day applied from 100 barrel capacity truck.

Peak traffic will occur in the second year of construction, when two drilling rigs and two completion teams could be active in the project area. A peak of 81 light vehicles and 94 heavy

vehicles, with a total of 175 vehicle round-trips per day could potentially occur during the days on which one well pad is under construction, two drill rigs (drilling one vertical well and one horizontal well) and two completion rigs (completing one vertical well and one horizontal well) are in operation, and dust suppression and interim reclamation are being conducted (see Table 3). Peak traffic will decrease by five heavy vehicles per day if water supply wells are drilled on the well pads.

Table 3
Marys River Estimated Peak Construction Traffic
for Vertical and Horizontal Wells in Vehicle Round Trips per Day[1]

Activity	Duration (days)	Peak Vehicle Round-Trips per Day		
		Light Vehicles	Heavy Vehicles	Total Vehicles
Road and Pad Construction	75	5	4	9
Drilling				
1 vertical well	50	11	3[2]	14
1 horizontal well	65	11	4[1,2,3]	15
Completion				
1 vertical well	21	12	24	36
1 horizontal well	35	12	57[4]	69
Service and Deliveries	50-65	30	0	30
Dust Control	100	0	1	1
Interim Reclamation	3	0	1	1
Total Peak Development Traffic		**81**	**94**	**175**

[1] Assumes two drill rigs (1 vertical well and 1 horizontal well), and 2 completion teams (1 vertical well and one horizontal well).
[2] Trucks hauling water for drilling (2 trucks per vertical well and 3 trucks per horizontal well) will not be required if a water supply well is drilled on the well pad.
[3] Assumes that the 20,000 barrels of water needed to drill a horizontal well are hauled in 100 barrel capacity trucks over a 65 day drilling schedule (3 trucks per day) and one additional truck per day (e.g., casing deliveries, cement trucks, wireline logging trucks).
[4] Assumes that the 200,000 barrels of water needed to complete a horizontal well are hauled in 100 barrel trucks over a 35 day completion schedule.

1.5.2 Operational Traffic

Traffic during the production-only phase of the MREP will include pumper and maintenance vehicles and trucks hauling oil and possible produced water. One pumper truck will visit each well pad approximately once per day and one maintenance vehicle will visit each well pad approximately 10 days per year. On average, two oil trucks per day will visit each well to collect and transport oil to refineries in Salt Lake City, Utah and California. A water truck will visit each well approximately once per day to collect and transport possible produced water to either an on-site disposal well or disposal facilities in Roosevelt, Utah. With up to 20 wells in production, peak operational traffic would include 62 vehicle round-trips per day (see Table 4).

Table 4
Marys River Estimated Peak Operational Traffic Requirements in Vehicle Round Trips per Day

Development Phase Component	Peak Vehicle Round-Trips per Day		
	Light Vehicles	Heavy Vehicles	Total Vehicles
Pumper[1]	1	0	1
Maintenance[2]	1	0	1
Oil Trucks[3]	0	25	25
Produced Water Trucks[4]	0	20	20
Total Production Vehicles	**2**	**45**	**47**

[1] Assumes one pumper visit per day per well.
[2] Assumes one maintenance truck serving all wells.
[3] Assumes 250 bbl/ oil production per day per well transported in 200 barrel trucks.
[4] Assumes one produced water truck per well per day. This traffic would be contained within the project area if produced water is disposed of in an on-site injection well.